

receiving instrument consists of a combination of twenty Morse receivers, to each of which is attached a style which marks on the receiving paper its proper sign, thus producing a stenographic message. Great speed in transmitting is claimed for this method, and the following figures are given as comparative :—

Morse simple ... ..	500 words per hour
Hughes simple ... ..	1,200 „ „
Wheatstone ... ..	1,800 „ „
Steno-telegraphic ... ..	10,000 „ „

A MEDICAL student, M. J. Ol-en, who has been engaged during the summer in studying the fungoid flora in the neighbourhood of Bergen (Norway), has found on Ask Island a specimen of the remarkable *Tricholoma colossus*. It is the first time it has been found in Norway, and it has only once been found in Sweden. The stem is  $2\frac{1}{2}$  inches in diameter. Prof. Elis Fries in describing this variety says: "I discovered this unique variety for the first time among branches of spruce lying on the ground in a place near the Tem Lake in Småland (Sweden). It is the largest and finest of the hitherto discovered mushrooms."

THE thirteenth annual *conversazione* of the Chester Society of Natural Science was held in the Town Hall on September 25, and was attended not only by the members, but by a contingent of the Iron and Steel Institute, who have been holding their annual meeting in the Cestrian city. The Kingsley Memorial Medal was awarded to Mr. A. O. Walker, F.L.S., and Kingsley Memorial prizes were given for local natural history collections. It was announced that a prize of 10*l.* would be given in 1885 for the best collection of coal-measure fossil plants from the Society's district, a similar sum in 1886 for the best collection of "Bees and Wasps" from the same area, and in 1887 "for the best Essay on the Physiography of the Society's District, on the lines of Prof. Huxley's Physiography;" the district in question being Flint and Denbigh, with as much of the county of Cheshire as lies west of a line drawn south from Warrington. The exhibition of microscopic objects was, as is usually the case at Chester, exceedingly good, and for teaching purposes they were rendered more useful by the publication by the Society of a little handbook of twenty-eight pages, on Natural History, for use in the annual *conversazioni* and other meetings of the Society. It is drawn up by Mr. C. F. Fish, and appears to be an expansion of the useful programme, on which we commented last year. The information as to the classification and structures of the lower orders of life, both animal and vegetable, appear to be very carefully done, and are very concise. The work could be made much more useful by expanding the geological and physical portions; it is published at a few pence.

DR. GEORG SCHWEINFURTH has left Berlin to return to Egypt, whence he intends to start upon a new scientific exploring tour through the desert.

ON September 18 the meeting of German naturalists was opened at Magdeburg, under the presidency of Dr. Gachde. Over a thousand men of science were present. Strasburg was fixed upon as next year's meeting-place, with Profs. Kussmaul and De Bary as secretaries. Among the addresses delivered we may mention:—On the relation of micro-organisms to the infectious diseases of man, by Prof. Rosenbach (Göttingen); on the importance of German colonisation in Africa, by Dr. Gerhard Rohlfs; various medical addresses by Drs. Schwarz (Cologne), Paetz (Alt-Scherbitz), Finkler (Bonn), and Prior.

THE death is announced near Sydney of James Snowdon Calvert, the last survivor of Leichhardt's Australian exploring expedition.

A TELEPHONE now transmits, by the ordinary telegraph wire, the music from the Brussels Opera House to the Royal Châlet at

Ostend. The system, of course, is Van Rysselberghe's, mentioned in our last number.

THE late Dr. Ferd. von Hochstetter's travelling reports, dating from the celebrated *Novara* Expedition (1857–59), are now being published in book form, upon the occasion of the twenty-fifth anniversary of the *Novara*'s safe return to Trieste. The book will contain a portrait of the author, a preface by V. von Haardt, and a map of the course of the *Novara*. Hölzel of Vienna is the publisher.

M. CHARLES HUBER, who was travelling in the interior of Arabia in the service of the French Ministre de l'Instruction Publique (formerly together with Prof. Euting of Strasburg) has been murdered near Labegh (Rabegh?) by Bedouins of the Harl tribe. His Arabian servant Mahmoud has met the same fate.

NEWS has been received from Capt. Adrian Jacobsen, now travelling in Northern Asia, by order of the Berlin Ethnological Museum with a view of making ethnographical collections. Capt. Jacobsen, after leaving St. Petersburg, visited Kasan, Ekaterinburg, and Tomsk, and has already sent home two large cases containing ethnographical objects collected among the uncivilised Russian tribes of the Tscheremiss, and Tschumrasch, and Wotjaks.

REFERRING to our note of last week on Mr. St. Clair's "Note on a Possible Source of Error in Photographing Blood Corpuscles," the author writes to say that "in Dr. Norris's photographs where the colourless disks are well defined, the dark ones are out of focus." But it has not been shown possible to produce the ghosts while the real images are *at all* visible, and until this is done we must adhere to the opinion we have already expressed.

THE additions to the Zoological Society's Gardens during the past week include a Toque Monkey (*Macacus pileatus* ♂) from India, presented by Mrs. Batchelder; a Common Marmoset (*Haplorhina jacchus* ♂) from Brazil, presented by Mr. W. E. Steinscher; six Great Bats (*Vespertilio noctula*), British, presented by Mr. W. Atkinson; two King Parrakeets (*Aprosmictus scapulatus*), two Cockateels (*Calopsitta novaehollandiae*) from Australia, presented by Mrs. C. Price; two Spanish Terrapins (*Clemmys trijuga*), South European, presented by Mr. W. H. J. Paterson; a Common Viper (*Vipera berus*), British, a Viperine Snake (*Tropidonotus viperrinus*) from West Africa, presented by Mr. William Cross; a Common Snake (*Tropidonotus natrix*), a Common Viper (*Vipera berus*), British, presented by Mr. W. H. B. Pain; a White-breasted Kingfisher (*Halcyon smyrnensis*) from India, two Reed Buntings (*Emberiza scheniculus*), a Blackcap (*Sylvia atricapilla*), a Pied Wagtail (*Motacilla lugubris*), British, a Tree Boa (*Corallus hortulans*) from Cuba, purchased.

#### OUR ASTRONOMICAL COLUMN

COMET 1884 *b* (BARNARD, JULY 16).—Dr. Berberich of Strasburg, who has investigated the elements of this comet from observations extending to September 14, has found an elliptical orbit, in which the period is only  $5\frac{1}{2}$  years, a result which will perhaps have been rather expected, considering the nature of the parabolic orbits previously calculated, and, as was pointed out by Prof. Weiss, their resemblance to the elements of De Vico's comet of short period observed in 1844. Dr. Berberich's ellipse is as follows:—

Perihelion passage, 1884, August 16<sup>h</sup> 48<sup>m</sup> 34<sup>s</sup> Greenwich M.T.

Longitude of perihelion ... ..	306° 7' 31".1	} Mean
„ „ „ ascending node ... ..	5 3 50.2	
Inclination ... ..	5 28 49.6	} 1884.0
Angle of eccentricity ... ..	36 3 43.8	
Log. semi-axis major ... ..	0.493392	
Period of revolution ... ..	2007.9 days or 5.4965 years	

At aphelion in this orbit the comet would be distant from the orbit of Jupiter 0'503, but there is a very much closer approach to the orbit of Mars, at a true anomaly of  $37^{\circ} 13'$ , corresponding to heliocentric longitude  $343^{\circ} 25'$ , where the distance of the two orbits is only 0'0088, and it is worthy of note that between April 5 and 10, 1868, both Mars and the comet would pass that point, and if Dr. Berberich's period is approximately correct, there must have been a close approach of the two bodies, possibly a closer one than calculation assigns. The following positions are deduced from the elliptical orbit:—

At Berlin, Midnight									
R.A.					Decl.		Log Distance from Earth.		
h. m. s.									
October	5	...	20 33 51	...	— 22 30'1	...	9'8331		
	9	...	20 46 54	...	21 2'5	...	9'8536		
	13	...	20 59 26	...	19 35'6	...	9'8746		
	17	...	21 11 28	...	18 10'0	...	9'8960		
	21	...	21 23 4	...	16 45'9	...	9'9175		
	25	...	21 34 14	...	15 23'5	...	9'9391		
	29	...	21 45 1	...	— 14 2'9	...	9'9608		

The comet is rapidly growing fainter, but it is obviously of importance for its theory that observations should be continued as long as possible.

COMET 1884 c.—A new comet was discovered by Herr Wolf at Heidelberg on September 17, and was observed at Strasburg on September 20. It was also independently detected by Dr. Copeland at Dun Echt on September 22, the night before the telegraphic notice from Kiel arrived at that Observatory. Prof. Tacchini has favoured us with the following observations made by himself and Prof. Millosevich at the Observatory of the Collegio Romano in Rome:—

Rome M.T.					R.A.					Decl.				
h. m. s.					h. m. s.					° ' "				
Sept.	21	...	9 24 47	...	21 15 46'00	...	+	21	59 22'6					
	23	...	7 39 12	...	21 16 44'33	...	+	21	7 48'7					

This comet is likely to remain visible for several months, according to the orbits yet calculated, but a somewhat wider extent of observation than is now available will be required to predict its track in the heavens with any degree of certainty.

THE LUNAR ECLIPSE ON OCTOBER 4.—We gave last week the times of occultations of two stars during the totality of this eclipse, of which accurate positions are found in our catalogues. A somewhat extensive list of stars liable to occultation has been determined at Pulkowa with sufficient precision for the predictions of the times of immersion and emersion, which have been communicated to various observatories. Several stars rated higher than the ninth magnitude appear on this list, where the *Durchmusterung* magnitudes are followed. Our remark last week should have been explained as referring only to stars of which accurate places are found in the catalogues.

### HYDROXYLAMINE AND THE ASSIMILATION OF NITROGEN BY PLANTS

THE researches of V. Meyer and E. Schulze on the action of hydroxylamine salts upon plants (*Berl. Ber.*, xvii. 1554) were undertaken with the *a priori* probability of showing that this base plays an important part in the synthetical activity of the plant; and although they have not succeeded in establishing the experimental fact, the results obtained are of great interest, and the whole is eminently suggestive of future possibilities. The supply of nitrogen to plants takes the form of nitrates and ammoniacal salts, and these classes of compounds being destitute of synthetical activity, we are driven to assume that the earlier stages of nitrogen assimilation consist in the conversion of these comparatively inert substances into derivatives having the "chemical tension" necessary to synthetic activity. Hydroxylamine and its salts, which occupy in point of oxidation a position intermediate between ammonia and the nitrates, are bodies possessing this character in the highest degree. To use the author's words, "the behaviour of this base towards the organic oxy-compounds is most aggressive: it is indeed astonishing with what facility it converts carbonyl-compounds into azotised derivatives." This is notably the case with the ketones and aldehydes of the fatty series, the products of the union being oximido-derivatives, e.g. aldioxime, acetoxime, isonitroso acids; in these the characteristic  $C=NO_2$  group easily undergoes reduction, with formation of the corresponding amido derivatives; and upon the hypothesis of the formation of hydroxylamine in the plant as the first stage in nitrogen assimilation, it is easy to see

in what manner its non-nitrogenous constituents, which for the most part possess the characteristics of aldehydes and ketones, would contribute to the further stages in its elaboration.

To test this hypothesis, in the first instance, the authors instituted parallel experiments on the culture of maize, to which the nitrogen was supplied in the form of ammonium sulphate, hydroxylamine sulphate, and hydrochlorate and potassium nitrate, respectively. The result was, in a word, to show that the hydroxylamine salts act as direct poisons to plant life, as indeed they have already been shown by Bertonio to act towards animal life. Having established this fact, the authors inferred their probable action as antiseptics, and experiment showed that they possess this property in a remarkable degree. This result, as they contend, does not negative the original hypothesis, as the occurrence of the base in the plant would necessarily be transitional.

It seems to us that the antiseptic properties of hydroxylamine are a direct consequence of its synthetical activity; and further that antiseptics fall into three classes according to their disturbance of one of the three essential conditions of cell life, which are: (1) hydration; (2) oxidation; (3) the synthetical activity of aldehydes (L6w and Bokorny), chiefly in the direction of condensation. In illustration of this classification we may cite as typical members of group (1) common salt, (2) sulphurous acid in its various combinations, (3) phenols.

### THE BRITISH ASSOCIATION REPORTS

*Second Report of the Committee, consisting of Prof. A. W. Williamson, Chairman, Profs. Sir H. E. Roscoe, Dewar, Frankland, Crum-Brown, Odling, and Armstrong, Messrs. A. Vernon-Harcourt, J. Millar Thomson, V. H. Veley, F. Japp, H. Forster Morley, and H. B. Dixon (Secretary), appointed for the purpose of drawing up a Statement of the Varieties of "Chemical Names" which have come into use, for indicating the causes which have led to their adoption, and for considering what can be done to bring about some Convergence of the Views on Chemical Nomenclature obtaining among English and Foreign Chemists.*—The Report is somewhat lengthy, and includes some long tables of varieties of names for common chemical substances. It commences with historical notes on chemical nomenclature. No attempt was made until about 100 years ago to name chemical substances in a way which would indicate their composition; alchemistic or "culinary" names being given to substances in many cases. Macquer is credited with being the first to introduce generic names like vitriol and nitre to indicate sulphates and nitrates. The term salt was used to indicate almost any substance soluble in water and affecting the sense of taste, and in the eighteenth century acids, salts, and bases began to be distinguished. Rouelle was the first to define a salt from its chemical properties, and distinguish it from acids and bases (see Kopp's "History of Chemistry," iii.). Bergmann and Guyton de Mousseau separately proposed systems of nomenclature, many terms of which are still in use. De Mousseau made the terminations of names of acids uniform, and the names of salts to indicate their composition from bases and acids. In 1787 Lavoisier, De Mousseau, Berthollet, and Fourcroy prepared a scheme of naming compounds which is practically that in common use now, introducing the terminations "ate" and "ic," "ite" and "ous," in acids and salts. But higher and lower oxides are not distinguished by generic names. Berzelius made a more elaborate classification of salts, and added some names. He distinguished the halogen compounds of hydrogen as hydracids, and distinguished clearly between "neutral," "acid," and "basic" salts. The views now held of acids, salts, and bases are practically those of Gerhardt and Laurent, who first recognised the part played by hydrogen in acids and salts. The Report then goes on to consider the tables, which give the number of times a substance has been distinguished by any particular name. Table I. deals with the names of oxides of carbon from 1755 to 1882. By far the greater number of sources give the names carbonic oxide to CO and carbonic acid to CO<sub>2</sub>; systematic names like carbonous oxide and carbonic oxide only occurring two or three times, the terms carbonic oxide and carbonic anhydride or dioxide being next in frequency. In France and Germany the names oxide de carbon and acide carbonique, Kohlenoxyd and Kohlensäure have been much more frequently used. But in several instances the same names have been used in a different sense; the term carbonic oxide being some-